



# APPLICATION CONFIGURATION CENTRALIZED LINUX WEB-BASED SERVER AT PT. XYZ

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**Abstract**— The use of the server as a supporter of business processes in a company is mandatory. Linux Server is a computer with a Linux operating system that provides certain types of services on a network. Servers with Linux operating system are selected because of their reliability in serving thousands of requests and the licensing nature of open source. Currently, server management still uses CLI remote console (command line interfaces) through SSH protocol to each server. In this final project web-based application that can manage many servers centrally, especially on installation activities, configuration, and control software used by the server.

**Keywords**— Linux, Server, Configuration

## I. INTRODUCTION

PT. XYZ is a private company engaged in the manufacture and distribution of software. As a company engaged in information technology, PT. XYZ has many servers to support the current business processes. Almost all servers use the Linux operating system and spread across multiple data centers in Indonesia. Currently, server management is performed by employees who served as system administrators. Management is done through the console cli (command line interfaces) with SSH connections to each server. One of the problems, when a system administrator performs activities such as installing and configuring services on a server via a console, is the absence of a report on the activity. Information technology is one fundamental needs in almost all business sectors [1]. If there are many system administrators managing the same server, it can not be known who and when the activity is done. In addition, statistics on the use of processor, memory, and storage on the server are not yet available. Though these statistics can be used as a consideration of procurement server hardware. Based on the exposure, it is proposed a web-based application that can document activities performed by system administrators such as installation, configuration, and control services on the server. An operating system is a program that acts as an intermediary between computer users and computer hardware. The purpose of the operating system is to provide an environment that allows users to run any program easily. One of the operating system is Ubuntu 12.04 LTS itself is the 16th Ubuntu release and is the 4th Long Term Support or LTS series. What is Long Term Support? LTS is an Ubuntu version that supports longer than usual Ubuntu versions ie 4 years for Desktop version and 5 years for the Server version [2]. The operating system has three main functions: process management, resource management, and data management [3]. A basic model can be used as an ingredient by an administrator to make decisions to perform quantitative analysis on internal and external data, it is intended that the decisions are made right to the intended target [4].

### 1.2 Research Problems

How to install, configure and control the existing software on the server and document it by controlling the software on the server by the network administrator and get the results of the statistical use of hardware on the server ?

### 1.3 Limitation Of Research

In order to discuss more focus, then in this discussion, the following limits are required:

1. In this study only discusses the process of installing, configuring, and controlling the software on the server by the System Administrator.
2. For software used on servers only Ubuntu and CentOS operating systems

### 1.4 Purpose And Objectives

Objectives gained in this study are as follows:

1. To improve the control and tracking data services software on the server.
2. To monitor system administrator activity.
3. To monitor the use of hardware on the server.

Benefits obtained in this study as follows:

1. Applications that have been made to provide information to the IT Manager related activities performed system administrators on the server.
2. Applications that have been made can be used by all employees who served as system administrators.
3. Can know the information on the use of hardware on the server, so the future can be considered in the procurement of goods and services in accordance with the needs of the server.
4. Become a new insight that is useful in the academic world, so it can be reused as a reference other research.

## II. METHODOLOGY

### 2.1 Methodology

Waterfall methodology is often also called classical life cycle (classic life cycle). The waterfall model provides a sequential or sequential approach to software lifecycle from communication, planning, modeling, construction, deployment [5].

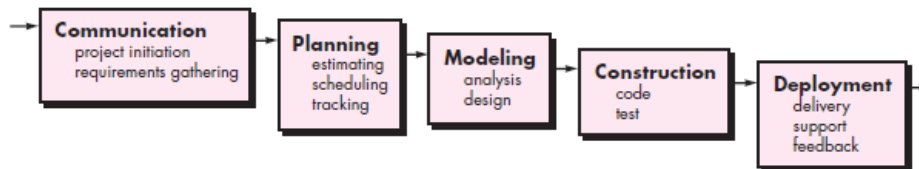


Fig. 1 Waterfall Model [5]

### 2.2 Monitoring

To monitor the network more efficiently and automatically is always required for large organizations such as universities, companies and other business sectors where manual network monitoring is very difficult, resulting in monitoring can be done without any administrator on a 24-hour basis see the monitoring application [6]. In real-time network monitoring makes software programming problems more observable and administrators can analyze historical data and remote network monitoring can be done, this makes the presentation of the server performance monitoring system program based on B / S mode. Application systems that use B / S mode can allow administrators to view server-side situations in performance testing and network maintenance [7].

### 2.3 The Simple Network Management Protocol (SNMP)

The Simple Network Management Protocol (SNMP) is a protocol that exists in the application layer in network management. The SNMP protocol can be designed and implemented in accordance with organizational requirements.

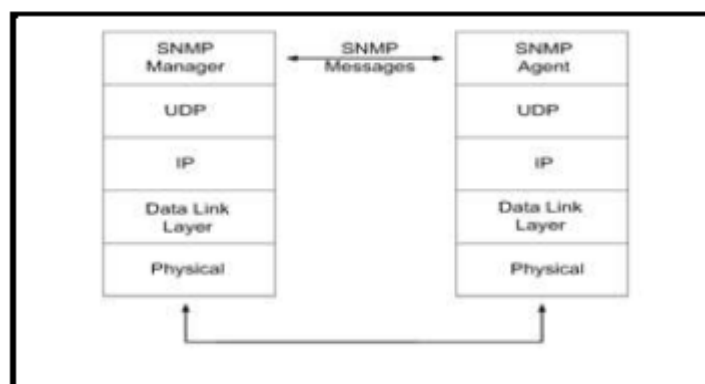


Fig. 2 SNMP Protocol Stack [8]

SNMP allows network administrators to manage the entire network for organizations. This protocol is part of TCP / IP. Most modern tools support SNMP, the SNMP Protocol allows to read, write and can provide statistical information about network devices. Each message is transferred to the internet using UDP

### 2.4 Network Time Protocol (NTP)

Network Time Protocol (NTP) adalah sebuah metode yang paling umum untuk digunakan dalam mensinkronkan jam dan perangkat komputer melalui Internet publik [9]. NTP on a Linux server also works to synchronize the time on all devices connected to the local network. Authenticated Network Time Protocol (ANTP): is a new variant of NTP designed to allow Simple Network Time Protocol (SNTP) clients to authenticate a single NTP server and issue timers within some margin of accuracy from server timers. The new ANTP protocol allows the ANTP server to authenticate itself to an ANTP client and provides a cryptographic warranty that no modifies the packets that have occurred while the packet is transiting, then ANTP messages, such as Autokey and NTS, are included in the field of NTP message extensions [10].

## III. ANALYSIS AND DESIGN SYSTEM

### 3.1 Analysis of the server network structure

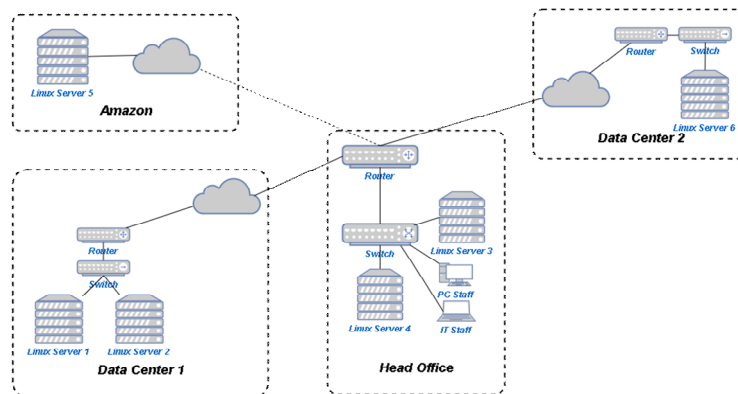


Fig. 3 Server Network Schema

Network communication using the star topology. Where to interconnect between server machines with each other must go through the Head Office as the center of communication.

### 3.2 Analysis of Current System

In the beginning, the employees who manage the server machine only amounted to 1 person. In line with the development of the company and the increasing server engine that must be managed, then the employee with a position as System Administrator plus. IT Manager as boss sees that the need for an application that can control the centralized servers of the company, to be more easily supervised. Currently, System administrators still use the remote console to each server.

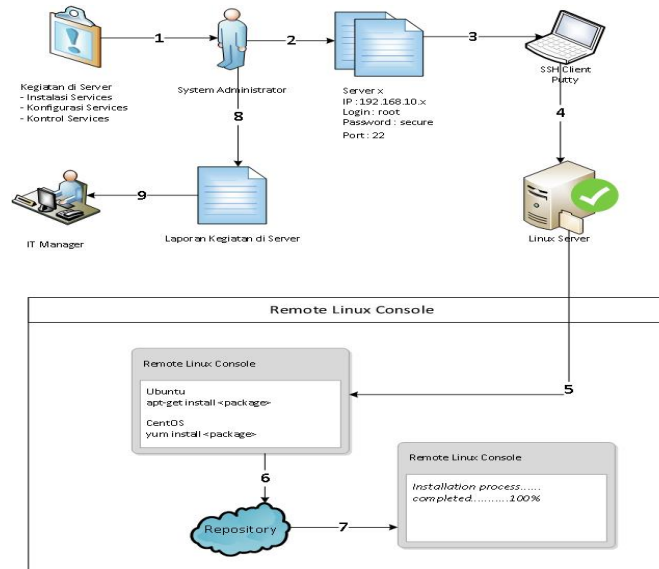


Fig. 4 Existing System

On a running system, employees with system administrator positions use PuTTY to the remote console to the server machine. If the connection is successful, PuTTY will display the Linux server console server screen. The system administrator can then run the command line (command line interfaces) to install, uninstall, control, configure, restart or shutdown the server machine. The success of these activities is known only by the System Administrator. IT Manager wants to know when the activity of a System Administrator when managing servers owned by the company.

IT Manager sees this as a necessity for all activities related to the server machine such as the installation process, control, and configuration of the software on the server to be known. This can not be done if you still use the application on the system running.

### 3.3 Analysis of proposed system

Analysis of proposed system in the form of a centralized configuration application on Linux web-based server can be seen through the use case diagram in Figure 5 below:

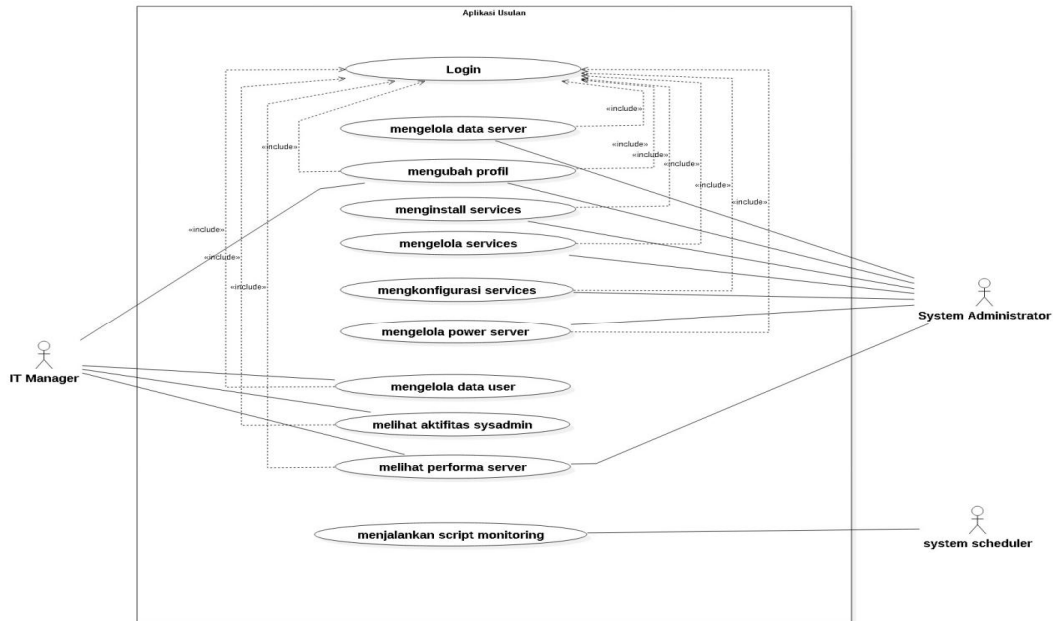


Fig. 5 Usecase diagram proposal

### 3.4 Activity Diagram

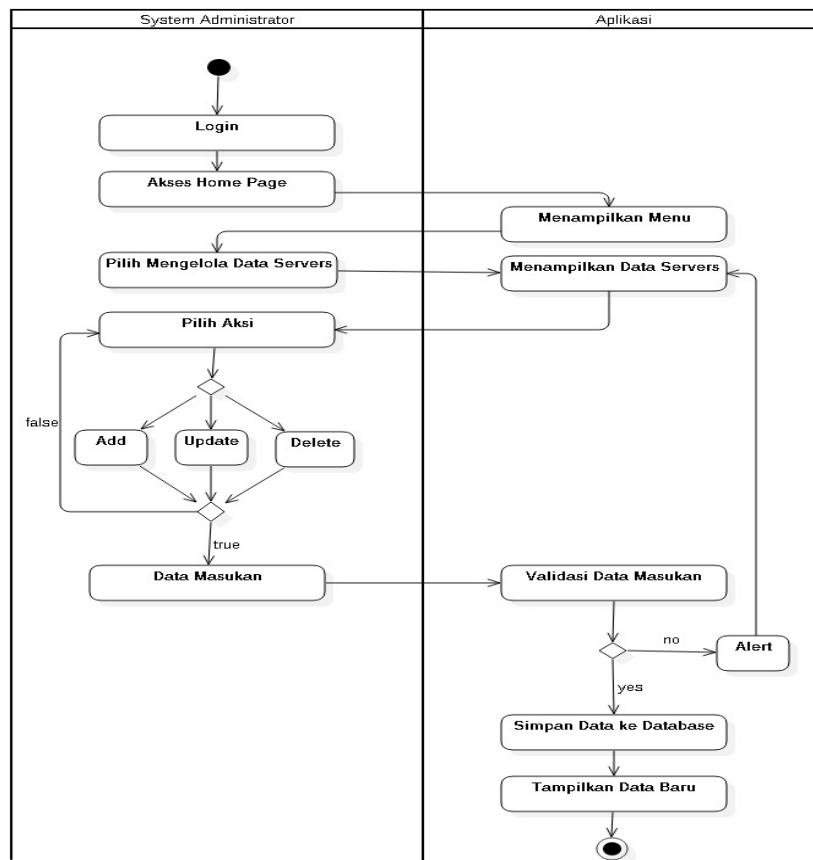


Fig. 6 Activity Diagram Manage Data Servers

Activity Diagram Managing Data Server describes how the process of master data server processing. This process includes displaying, adding, modifying, and deleting server data. as for validation of input data is needed to ensure server data is added or changed (update) is correct, no duplication, and can be used to connect to the server computer.

#### 4.1 Implementation

Implementation of the interface is a description of the interface or display created in this study. The following is the result of a pre-defined interface implementation:

##### a. Login Interface

The login page is the start page that appears before the user can use the functions contained in the application, Users who already have the user and password simply fill it but if the user does not have a user and password then the user can contact the network administrator and can see to the fig 7 below.

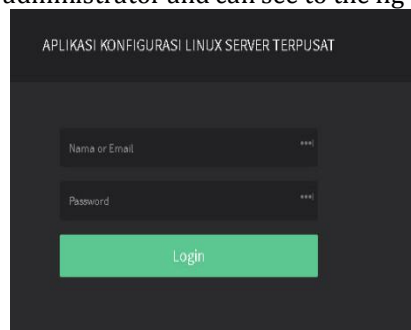


Fig. 7 Login Page

##### b. System Administrator Page

The Administrator's home page is a page for displaying server data management menus, installing services, managing services, managing power servers, and viewing server performance reports see fig 8.

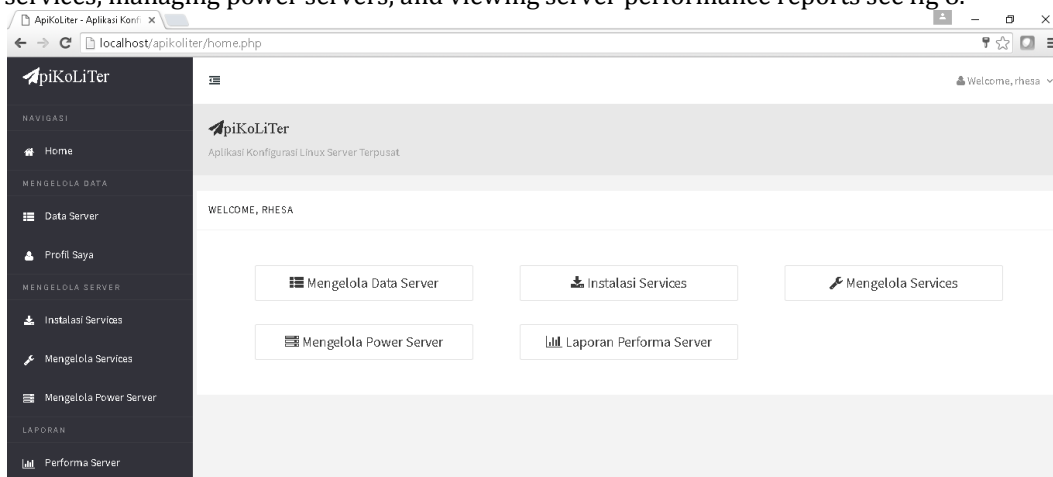


Fig. 8 Home System administrator page

##### c. Manage Services Page

Managing Services page is intended for application users with System Administrator permissions. On this page, users can perform activities management software services on server machines such as Enable, Disable, Start, Restart, Stop, and Uninstall.

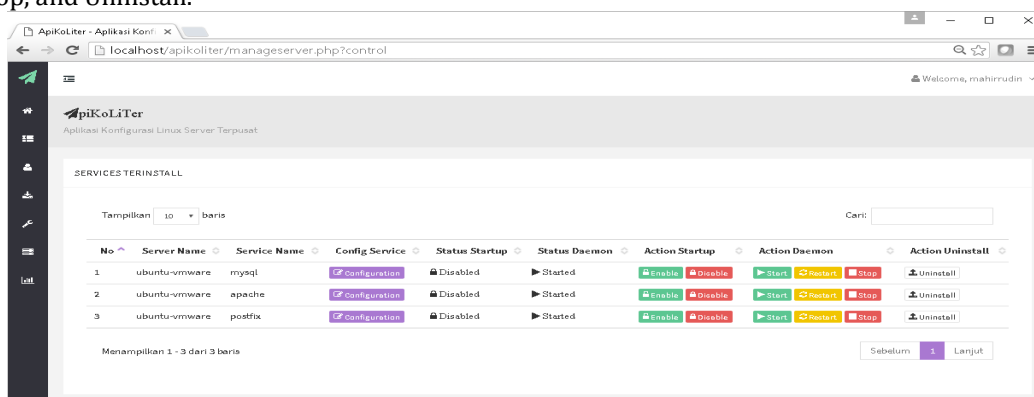


Fig. 9 Manage Services Page

#### 4.2 Analysis of Application Testing Results

From the tests that have been done can be drawn a conclusion that the functions that exist in the application can run on the computer specifications used for testing. The permissions on the application, the validation function, and the functions associated with the server machine are in conformity with the initial planning ie :

1. Employee position System Administrator cannot access user data page which is used to manage user data master application.
2. Only IT Manager can access the sysadmin activity report page which contains all user application activities with system administrator privileges.
3. The server data validation process can be successful when data entered there is no duplication and the SSH connection to the server machine is successful.
4. User data validation process can be successful when the data username inputted no duplication.
5. The installation process of software services can be successful when the SSH connection to the server machine is successful, and the server machine has an internet connection.
6. The uninstallation of software services can be successful when the SSH connection to the server machine is successful, and the software services are lost from the server machine.
7. The process of controlling daemons and startup services can be successful when the SSH connection to the server machine is successful, and the status of the daemon or startup corresponds to the selected action button.
8. The activity report contains only activities related to the server machine such as installing, uninstalling, daemon controls, startup controls, and configuration file changes.
9. Server performance in accordance with the use of CPU, RAM, and Hardisk server.

#### IV. CONCLUSIONS

Based on the implementation and testing above can be concluded that:

1. To install, configure, and control software on a Linux server, an application that can communicate via SSH is required and can use Linux CLI commands (command line interfaces).
2. Proposed applications use the buttons to replace the use of Linux CLI commands (command line interfaces) that are typed directly in the previous application. This reduces the risk of server failure caused by typing errors.
3. IT Manager can know the activities performed by System Administrator on the server machine in real-time. Because every installing activity, configuration, and control software that is done through the application, is recorded in the database.
4. Suggestions for hardware requirements are taken from the CPU usage statistics, RAM, and Hardisk on the server machine. A server is safe when the average use of CPU, RAM, and Hardisk is still below 50%.

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#### REFERENCES

1. A. N. Boy Yuliadi, "RANCANGAN DISASTER RECOVERY PADA INSTANSI PENDIDIKAN STUDI KASUS UNIVERSITAS MERCU BUANA," vol. 9, no. 1, pp. 30-39, 2016.
2. S. Dan and L. Ubuntu, "FILE SHARING SERVER MENGGUNAKAN SAMBA," vol. XVIII, no. 2, pp. 11-17, 2016.
3. P. Gupta, P. Kumar, S. Wason, and V. Yadav, "Operating System," vol. 2, no. 2, pp. 37-46, 2014.
4. F. Masya, H. Prastiawan, and D. Putri, "Design and Implementation of Lecturer Evaluation System Using ELECTRE Method in Web-based Application," vol. 4, no. 5, pp. 242-250, 2017.
5. P. . Roger S. Pressman, Ph.D, Bruce R. maxim, "Software. Engineering. A.Practitioners. Approach. 8th.edition.pdf." 2015.
6. R. Khan, S. U. Khan, R. Zaheer, and M. I. Babar, "An Efficient Network Monitoring and Management System," vol. 3, no. 1, 2013.
7. P. G. Student, K. S. Layout, and K. S. Layout, "PERFORMANCE ANALYSIS OF SYSTEM RESOURCES BY SERVER MONITORING," vol. 2, no. 7, pp. 3153-3157, 2013.
8. A. S. Shaffi, "Managing network components using snmp," no. June, 2016.
9. A. N. Novick, M. A. Lombardi, K. Franzen, and J. Clark, "Improving packet synchronization in an NTP server," no. March, 2018.
10. B. Dowling, D. Stebila, B. Dowling, D. Stebila, and G. Zaverucha, "Authenticated Network Time Synchronization This paper is included in the Proceedings of the Authenticated Network Time Synchronization," 2016.